# Plant & Animal Science Course No. 18301 Credit: 1.0

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| **Student name:** |  | **Graduation Date:** |  |

Pathways and CIP Codes: Comprehensive Agricultural Science (01.9999);

Course Description: **Technical Level:** Agricultural Production courses combine content related to animal and plant production, providing comprehensive coverage of the production functions of the agricultural industry. These courses typically cover such topics as care and management of farm animals, crop production and harvesting, plant and animal insect and disease control, efficient resource management, and farm management.

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: Career Planning

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Examine and choose career opportunities that are matched to personal skills, talents, and career goals in an AFNR pathway of interest |  |

## Benchmark 2: Agribusiness

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Apply fundamental accounting principles, systems, tools and applicable laws and regulations to record, track and audit AFNR business transactions (e.g., accounts, debits, credits, assets, liabilities, equity, etc.). |  |
| 2.2 | Develop, assess and manage cash budgets to achieve AFNR business goals. |  |
| 2.3 | Analyze characteristics and planning requirements associated with developing business plans for different types of AFNR businesses. |  |
| 2.4 | Assess and apply sales principles and skills to accomplish AFNR business objectives. |  |

## Benchmark 3: Animal Systems

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Evaluate and describe characteristics of animals that developed in response to the animal’s environment and led to their domestication. |  |
| 3.2 | Analyze and document animal welfare procedures used to ensure safety and maintain low stress when moving and restraining animals. |  |
| 3.3 | Utilize tools, technology and equipment to perform animal husbandry and welfare tasks |  |
| 3.4 | Differentiate between nutritional needs of animals in different growth stages and production systems (e.g., maintenance, gestation, natural, organic, etc.). |  |
| 3.5 | Analyze and apply information from a feed label and feeding directions to feed animals. |  |
| 3.6 | Analyze the functions of major organs in the male and female reproductive systems. |  |
| 3.7 | Demonstrate how to determine probability trait inheritance in animals. |  |
| 3.8 | Demonstrate artificial insemination techniques. |  |
| 3.9 | Analyze the use of modern equipment, technology and handling facility procedures and determine if they enhance the safe, economic and sustainable production of animals. |  |
| 3.10 | Explain how animals are classified using a taxonomic classification system. |  |
| 3.11 | Analyze the functions of each animal cell structure. |  |
| 3.12 | Compare and contrast desirable anatomical and physiological characteristics of animals within and between species. |  |
| 3.13 | Perform simple health-check evaluations on animals and practice basic emergency response procedures related to animals. |  |

## Benchmark 4: Biotechnology

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Investigate and explain the relationship between past, current and emerging applications of biotechnology in agriculture (e.g., major innovators, historical developments, potential applications of biotechnology, etc.). |  |
| 4.2 | Implement standard operating procedures for the proper maintenance, use and sterilization of equipment in a laboratory. |  |

## Benchmark 5: Natural Resources and Environmental Sciences

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | Use a soil survey to determine the land capability classes for different parcels of land in an area. |  |
| 5.2 | Analyze how interactions between groundwater and surface water affect flow and availability of water. |  |
| 5.3 | Identify and describe waste management systems. |  |
| 5.4 | Apply identification techniques to determine the species of wildlife or insect. |  |
| 5.5 | Assess and apply techniques used to fight wildfires, manage prescribed fires and ensure human safety. |  |
| 5.6 | Assess the impact of human activities on the availability of natural resources. |  |
| 5.7 | Demonstrate cartographic skills, tools and technologies to aid in developing, implementing and evaluating natural resource management plans. |  |

## Benchmark 6: Food Products & Processes

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Analyze and document attributes and procedures of current safety programs in food products and processing facilities. |  |
| 6.2 | Compare and contrast the relative value of food constituents relative to food product qualities (e.g., taste, appearance, etc.). |  |
| 6.3 | Analyze factors that affect quality and yield grades of food products. |  |
| 6.4 | Interpret safety procedures used in food distribution to ensure a safe product is being delivered to consumers. |  |

## Benchmark 7: Plant Systems

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 7.1 | Determine the influence of environmental factors on plant growth. |  |
| 7.2 | Prepare and manage growing media for use in plant systems. |  |
| 7.3 | Develop and implement fertilization plan for specific plants or crops. |  |
| 7.4 | Classify plants according to taxonomic systems. |  |
| 7.5 | Identify and analyze major local weeds, insect pests and infectious and noninfectious plant diseases. |  |
| 7.6 | Apply knowledge of photosynthesis to analyze how various environmental factors will affect the rate of photosynthesis. |  |
| 7.7 | Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems. |  |
| 7.8 | Demonstrate plant propagation techniques in plant system activities. |  |
| 7.9 | Demonstrate proper use of plants in their environment (e.g., focal and filler plants in floriculture, heat tolerant and shade plants in a landscape design, etc.). |  |

## Benchmark 8: Ag Communications

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 8.1 | Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings. |  |
| 8.2 | Apply techniques for ensuring clarity, logic and coherence to edit written and visual communications (e.g., emails, reports, presentations, technical documents, diagrams, etc.). |  |

## Benchmark 9: Ag Research

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 9.1 | Analyze how different research methods are used to generate data in a variety of situations. |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

CTE Pathways Help Desk

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